

CIVIL ENGINEERING HISTORY

PAVING THE WAY: THE ORIGINAL 819TH RED HORSE SQUADRON'S FIRST YEAR

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On August 8, 1997, the 819th RED HORSE Squadron was activated at Malmstrom Air Force Base (AFB), Montana, reviving a piece of civil engineering history. The original 819th unit was activated 31 years earlier. This article will recount that unit's first year of existence, including its training and deployment to Vietnam, and will discuss accomplishments and lessons learned.



In 1966, the American buildup in Southeast Asia was well underway as thousands of additional troops poured into the region every month. For the Air Force, adequate basing was quickly becoming a problem because bases could not be constructed as fast as military leaders wanted. Base construction was done primarily by a civilian construction combine known as RMK-BRJ (Raymond International, Morrison-Knudsen, Brown and Root, and J.A. Jones). However, they could not keep up. The first two RED HORSE units, the 554th and 555th Civil Engineering Squadrons (Heavy Repair) had deployed to Phan Rang and Cam Ranh Bay Air Bases, respectively, in South Vietnam during the month of February 1966. Even before the arrival of the full unit, the Air Force was asking for more RED HORSE squadrons. Among the units was the 819th.

The 819th squadron was activated in early February 1966 per Special Order G-27, Headquarters, Pacific Air Forces, and originally slated for Ban Sattahip Air Base, Thailand. The unit's first commander was Colonel John B. Rose, Jr. Personnel manning began on April 15th with all personnel assigned TDY to Forbes AFB, Kansas, for individual and unit training. The authorized strength was 12 officers and 388 airmen.

TRAINING

Training for the unit began on May 1st and continued through September 1st, when the last increment of the squadron departed for Southeast Asia. For the training period, the squadron was assigned to HQ Tactical Air Command (TAC) and was trained in accordance with plan developed by TAC for RED HORSE units. The overall training program was divided into four phases:

- Phase I consisted of orientation on the mission and organization of RED HORSE squadrons; processing and bed down; personnel screening and commander's time.
- Phase II included academic training in two categories: General Subjects and Special Subjects. General Subjects covered items relating to the unit mission including small arms familiarization and qualification, physical

conditioning, field living condition, supply discipline, and concept of operations for the unit. Special Subjects included topics such as ARMCO revetment construction, well drilling, AM-2 matting, aircraft arresting systems, sawmill operations and scuba diving.

- Phase III, Unit Operational Readiness Training, consisted of classroom lectures conducted by squadron personnel, selected work assignments and two training projects assigned by HQ TAC. These projects were the completion of an assault landing strip at Pope AFB, North Carolina, and construction of an assault landing strip at Peason Ridge, Louisiana.
- Phase IV concluded the training time and was made up of commander's time used to prepare the squadron for deployment.

One of the most beneficial aspects of the training was not planned. The Peason Ridge project included a mobility exercise of moving equipment from Forbes to Peason Ridge by C-130 aircraft. When it was learned that not all equipment would fit on the aircraft, the unit insisted they be allowed to conduct a convoy. This experience proved invaluable when the unit's heavy equipment arrived in Vietnam and had to be convoyed between the port and Phu Cat.

ORGANIZATION

The 819th followed the standard RED HORSE organizational structure with six sections: administration, medical, engineering/operations, logistical, airfield, and cantonment. The logistical section included a supply and services flight and an equipment maintenance flight. The cantonment section had two identical structural flights and a utilities flight.

In addition to the men of the squadron, local labor augmented the unit on almost every project and was a major contributing factor in the unit's work. Initially, the unit was authorized a strength of 764 workers, but this was subsequently reduced to 514 with the maximum of 511 ever employed at any time. Working with the local Vietnamese was a challenge for the engineers.

Communication was primarily through the lavish use of sign language and pantomime, although several supervisors became fluent in the language. Labor relations became strained at times because of minor grievances and misunderstandings, but were generally resolved by wholesale firings. On one occasion a work team staged a sit-down strike. This was quickly broken by simply firing the workers. A policy of firmness coupled with fairness proved most useful for dealing with the workers. The best results were obtained when airmen actually worked side-by-side with the Vietnamese rather than occupying solely a supervisory role. Overall, the presence of local labor in the work force proved to be a vital asset and were responsible for approximately 30 percent of the unit's construction.

DEPLOYMENT

The destination for the unit was changed to Phu Cat AB, Republic of Vietnam, in June. This site was located 300 miles north of Saigon and about 20 miles from the coast. The area, formerly a Viet Cong training center, lay in a large, rice-producing valley. Members of the 819th's advance party began arriving in early August to prepare to bed down the main squadron's personnel and equipment due to arrive later that month. Engineers and equipment from the 554th and 555th and contractors from RMK-BRJ also deployed to Phu Cat to assist the 819th in getting settled. The advance team constructed 50 personnel hootches and a 7,800 square foot dining hall, cleared an equipment parking lot and assembled a single wall inflatable warehouse. Although the ideal mix of skills



RED HORSE living quarters under construction at Phu Cat AB.

was not available, Air Force specialty codes were forgotten as electricians set forms and mixed concrete and plumbers drove dump trucks. Facilities were ready when the full unit arrived.

CONSTRUCTION

The initial division of effort at Phu Cat called for RMK-BRJ to complete all horizontal construction while RED HORSE was responsible for all vertical construction. While such a division of effort would appear to establish a clear line of demarcation between the two construction agents, this was not always the case. A mutually cooperative relationship soon developed in light of the enormous tasks required to complete the base. A free exchange of information, equipment and supplies helped make this possible.

The 819th's Engineering/Operations section carried out the surveying, facility design, and scheduling for the unit's work. Standard designs for various structures could not be used because certain materials were not available in theater or because they required complex fabrication techniques. As a result, designs were prepared based on materials available and ease of construction.

The Cantonment section was responsible for all vertical construction assignments, including forming for concrete, placing and finishing concrete, carpentry, electrical, plumbing, and roofing work. Utility operations were characterized by two unique factors. First, the entire 400-man squadron was located in one permanent cantonment and industrial area. This generated the requirement for permanent utility plants of large capacity rather than a primary dependence on small mobile units. Second, the unit was the initial Air Force unit on an undeveloped base. Thus, there was a requirement to be totally self-sufficient from the standpoint of utilities.

The original generator package included five 5kW, 10kW, and 30kW units each. These were adequate to provide power to outlying job sites, but were not satisfactory to produce stable, three-phase power on a continuous basis for the permanent camp facilities. The overall power demand for the squadron climbed to more than 200kW and exceeded

the combined power output of the larger units provided. The power plant finally developed by the 819th comprised three 150kW diesel generators loaned by a base civil engineer unit. However, maintenance of the units was problematic for the operators because of the paucity of spare parts.



Recreation Center under construction by RED HORSE teams at Phu Cat Air Base.

The original water treatment package was made up of two 600 gallons/hour trailer-mounted erdilators and later supplemented by a 3000 gallons/hour erdilator on loan from the 554th. Using highly contaminated river water as a source, these units were hard pressed to meet the squadron's demands. Relief was obtained by drilling two wells that produced much purer water at a combined capacity of 70 gallons/minute.

The Airfield section of the 819th was responsible for the operation of all heavy equipment, laying of T-17 membrane and AM-2 matting, and construction of all revetments. To build foundation pads, roads and open storage areas, the 819th had to move over one million cubic yards of earth. This went smoothly because of the high level of training and careful attention paid to vehicle maintenance. Daily greasing of fittings and cleaning of all filters were mandatory. Only one piece of equipment went out of commission in the first year.

The extreme heat caused a number of problems related to AM-2 work. Temperature of the matting reached 140 degrees during the day and produced excessive personal discomfort for the workers. Working at night eliminated the heat problem; however, the shadows created by the lights hindered the laying operation to such an extent that no

Member of the 819th operates a bulldozer during construction at Phu Cat AB, April 1967.



increase in production could be obtained over the day shift. Using gloves, salt tablets and taking frequent breaks proved to be the optimal method of working. A second problem related to the heat was thermal expansion of the matting. On one parking ramp 564 feet wide, the expansion amounted to as much as six inches in any one row during the day. This presented a continuous problem in trying to maintain perfect alignment on the lead edge of the matting.

The Logistics section was responsible for material control, vehicle maintenance and food service. These proved particularly challenging for a remote site at the end of a 6,000-mile supply pipeline. The work for this section actually began on the first day at Forbes AFB. When the unit finally deployed, it left with a 100 percent fill on all toolboxes and weapons. To help ensure

their equipment and supplies arrived when and where required, the 819th sent two people to Gulfport, Mississippi, to assist with the processing and loading of their ship. This aided immensely in the off-loading of the material in Vietnam. In addition to their initial shipment of materials, Seventh Air Force requisitioned a substantial amount of building materials for the unit. These shipments included 3 million board feet of lumber, 5,000 tons of electrical and plumbing supplies, 60,000 bags of cement, 5,100 bundles of AM-2 matting, 64 pre-engineered buildings and 7,500 sheets of transit roofing.

The condition of materials received at Phu Cat was a constant problem. Cement was not packaged for shipment to a combat area where rough handling was the rule. Approximately 50 percent of the cement was lost simply because of poor packaging. The Army was responsible for surface transportation, including unloading ships and overland transportation to Phu Cat. Supplies were often placed in trucks in such a manner that it appeared they were loaded from a large hopper. For example, revetment parts were simply dumped into a five-ton cargo truck and had to be unloaded by backing up at a high rate of speed, applying the brakes and letting it slide out the rear end onto the ground. Using the train was no better. Despite an agreement that the unit would truck all corrugated sheet metal to Phu Cat

RED HORSE construction team members place forms for foundation piers of storage building at Phu Cat AB, September 1966.



with their own trucks, it was loaded on the train one time. Because of limited security, Vietnamese boarded the train just outside of Qui Nhon and during the 18-mile trip to Phu Cat threw sheet metal off as fast as they could. The unit had to purchase 8,000 additional sheets of corrugated metal from Singapore to finish construction of the pre-engineered buildings.

The initial division of labor between RED HORSE and RMK-BRJ was modified as time went on. Due to delays and escalating construction costs, Seventh Air Force, which as responsible for paying RMK-BRJ, had to cut back on its contract. Their work was reduced to only the runway, roads, utilities, the ammunition area, and the control tower. Even this was not completed. Air Force military engineers completed the installation of the overhead power distribution system, water and sewer lines and significant amounts of paving. Phu Cat became the one base in Vietnam where almost all building and construction, and the greatest percentage of earthen and paving construction were accomplished by RED HORSE.

RESULTS

After one year, the men of the 819th had lived up to the RED HORSE reputation for productivity. They had moved 1.659 million cubic yards of earth, poured 15,500 cubic yards of concrete, and constructed buildings totaling 633,000 square feet. In addition, they had placed 2.1 million square feet of AM-2 matting, finished over 50,000 linear feet of utility lines, fences, and storm drainage facilities, erected more than 5,000 linear feet of aircraft revetments and completed over 5 miles of road.

The 819th would remain at Phu Cat until early 1970 when it moved to Tuy Hoa AB, Vietnam, to help close the base. It returned from Vietnam in 1970 and was stationed at Westover AFB, Massachusetts, until 1973 when it moved to McConnell AFB, Kansas. In 1979, it was assigned to RAF Wethersfield, United Kingdom, and tasked with rapid runway repair responsibilities for United States Air Forces in Europe along with its traditional heavy repair role. The 819th was inactivated in August 1990.